Agricultural- and Wood Products-Based Manufacturing Industries Growing at a Modest Pace

A substantial share of economic activity is linked to agricultural- and forest-based raw inputs. Nonmetro areas have captured a relatively large share, but metro areas claim most of the value-added activity. A large share of the value that is added is paid to owners of capital. New investment is modest, consistent with modest rates of growth in production compared with other manufacturing industries.

The selected agricultural- and wood products-based industries examined in this issue accounted for $393 billion of value added in 1995 (table 1). That total was 23 percent of all value added in the U.S. manufacturing sector that year. This does not include value added in marketing and transportation activities by firms that handle finished manufactured goods. Clearly, a substantial share of economic activity is linked to agricultural- and forest-based inputs.

These industries used materials worth $496 billion, which was 26 percent of all manufacturing materials. This includes many nonagricultural materials and also "double-counts" some materials. For example, logs are counted as materials for sawmills, and the lumber produced by the sawmills is counted as materials for furniture industries. Nevertheless, value-added industries consume a large quantity of raw materials, and their high share of all manufacturing materials shows that they are relatively materials-intensive compared with other industries.

The importance of materials in their cost structure means that manufacturers of agricultural- and wood-based products are somewhat more likely to locate near their source of raw materials. That often means a rural location. While the majority of value-added activity occurs in urban areas, the share of agricultural- and forest products-based value added in nonmetro areas is relatively large compared with other industries. About 30 percent of value added in five major agricultural- and forest products-based industries (food, tobacco, lumber, paper, and leather products) was in nonmetro areas during 1994 (the most recent year for which we have data on nonmetro shares). In other manufacturing industries, the nonmetro share of value added was less than 17 percent.

Agricultural- and wood products-based industries account for an important part of the nonmetro manufacturing base. Five such industries (food processing, tobacco, lumber and wood products, pulp and paper, and leather products) account for 29 percent of all manufacturing value added in nonmetro counties (table 2). Food processing, with a share of nearly 14 percent, is the largest single nonmetro industry. Lumber and wood products and paper products each account for more than 7 percent. However, a large part of the nonmetro manufacturing base has little or no connection to agriculture or forestry. For example, four large nonmetro industries that have virtually no agricultural linkages (fabricated metal products, industrial machinery, electrical, and transportation equipment)

Table 1

Characteristics of selected value-added industries, 1995

Value-added industries account for over one-fifth of U.S. manufacturing

Item	Value-added industries[1]	Share of all manufacturing
	Billion dollars	Percent
Value added	393	23
Salaries and wages	111	18
Payment to other factors	282	26
Value of materials used	496	26
Capital expenditures	28	22
	Millions	
Employment	4.16	22

[1]Value-added industries include those defined in appendix, "Definitions," p. 69.
Source: U.S. Bureau of the Census, Annual Survey of Manufactures, 1995.

account for a share of value added identical to the share attributed to the five major agricultural- and forest products-based industries.

Capital-Intensive, Modest Levels of Investment

Wages and salaries of $111 billion were paid to 4.16 million persons employed in agricultural- and wood products-based industries in 1995 (table 1). Wages and salaries account for about 28 percent of value added. Wages are relatively low in value-added industries (see "Value-Added Workers Earn Less, Have Less Education Than Other Rural Manufacturing Workers"). Their share of manufacturing wages is only 18 percent, but they account for 22 percent of manufacturing employment. The remaining share of value added is paid to owners of capital (lenders, stockholders, partners, and proprietors) in the form of interest, dividends, and profits; to providers of business services; to corporate officers, whose salaries are not included in the wages and salaries of $111 billion; and to various levels of government in taxes. In addition, some of these dollars may be reinvested as retained earnings. Agricultural- and wood products-based industries have a low ratio of wages to value added compared with the average for all manufacturing (36 percent). This low ratio again reflects the relatively low wages in many of these industries, but it also indicates that many of them are relatively capital intensive. In capital-intensive industries, owners of capital receive a relatively large share of payments to factors of production, and labor receives a smaller share. Manufacturing activities are much more capital intensive

Table 2

Shares of rural and urban manufacturing value added, by industry, 1994

Agricultural- and wood products-based industries are an important component of the rural manufacturing base

Industry	Rural	Urban
	Percent	
Primarily agricultural- and wood products-based	**29.3**	**16.3**
Food processing	13.6	10.1
Lumber and wood products	7.4	1.4
Pulp and paper products	7.2	3.1
Leather and leather products	.6	.2
Tobacco products	.5	1.6
Other manufacturing	**70.7**	**83.7**
Industrial machinery and equipment	8.7	10.4
Chemicals	8.5	12.0
Electrical equipment	7.4	10.1
Transportation equipment	6.5	11.9
Fabricated metal products	6.0	6.0
Rubber and miscellaneous plastics	5.9	4.1
Textile products	5.4	1.2
Primary metal products	6.0	3.9
Apparel	4.0	2.0
Printing and publishing	3.7	8.3
Stone, clay, and glass	3.3	2.3
Furniture	2.3	1.3
Instruments	2.3	6.7
Miscellaneous manufacturing	1.3	1.6
Petroleum and coal products	1.1	1.9
All manufacturing	**100.0**	**100.0**

Source: ERS analysis of U.S. Bureau of the Census, special tabulation of *1994 Annual Survey of Manufactures* data.

than other types of value-added activities, such as wholesale-retail, food service, and recreation activities.

Agricultural- and wood products-based industries are adding to their capital at a rate similar to that of other manufacturing industries. Their share of expenditures for new and used capital (purchases of machinery and equipment, plant additions, updates, or expansions) during 1995 was 22 percent, the same as their share of employment and output. Capital expenditures per worker ($6,800) were also about the same as the average for all manufacturing. Capital expenditures are an indicator of investment, which is triggered by industry growth and expansion, as well as the need to replace worn out and obsolete capital.

Value-Added Industries Moderately Growing

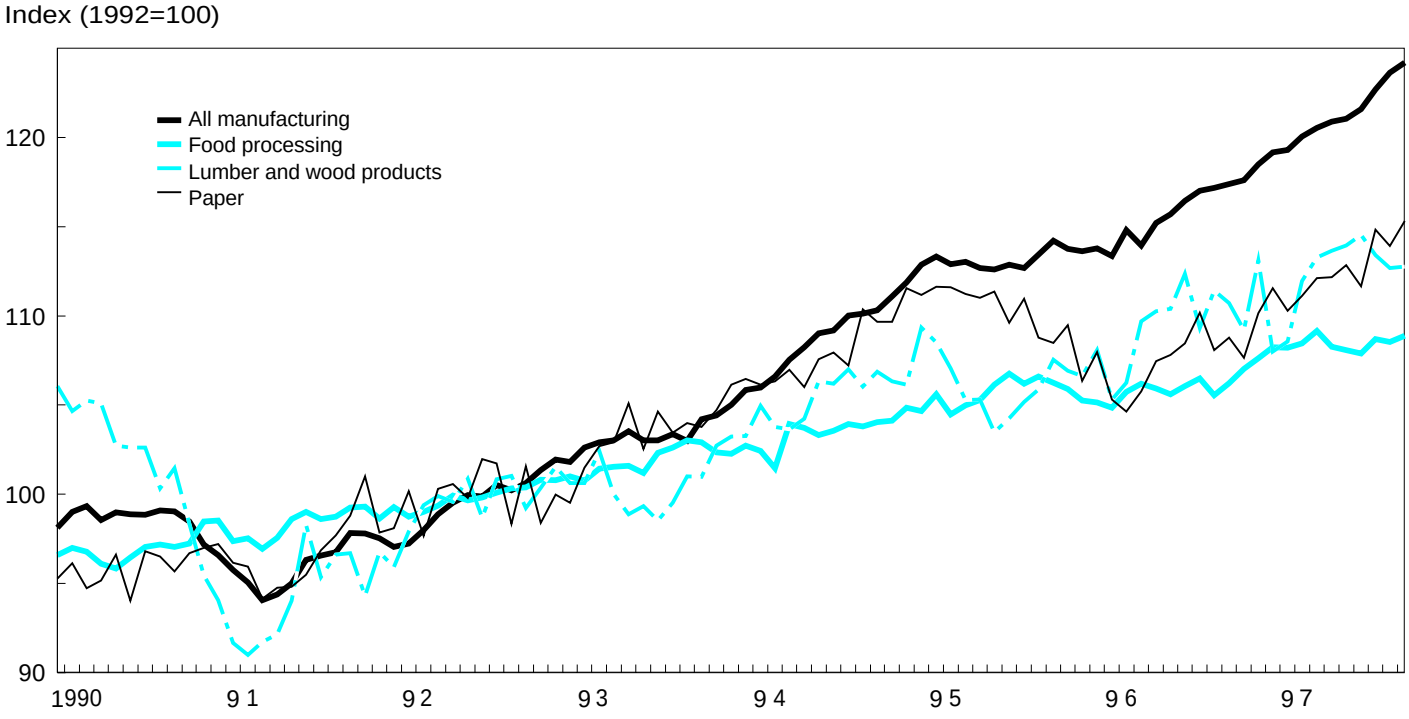
Most agricultural- and wood products-based industries have shared in the robust economic growth enjoyed by the U.S. economy during the mid-1990's, but growth has been more rapid for other types of manufacturing. Food processing has grown at a steady rate through the 1990's (fig. 1). Mid-1997 production is estimated to be about 8 percent above its 1992 level. However, the growth rate of food processing has been only about one-third the rate for all manufacturing. In late 1997, total manufacturing production was about 25 percent above 1992 levels. Industries with the most rapid growth are generally technologically sophisticated machinery and equipment industries, in which the United States has a comparative advantage, such as aircraft, computer, and electrical equipment.

Lumber and wood products is a highly cyclical industry, as can be seen by the steep decline in production during the 1990-91 recession and generally greater fluctuation from month to month compared with food processing and all manufacturing (fig. 1). The lumber and wood products industry is influenced by macroeconomic events through its dependence on the housing market. The industry has also been affected by Federal

Figure 1

Indexes of industrial production: Selected value-added industries and all manufacturing, 1990-97

Recent growth in value-added industries has lagged behind overall manufacturing growth



Source: Federal Reserve System Board of Governors.

Government environmental and timber harvesting policies as well as developments in world markets. Since 1992, production in the lumber and wood products industry has grown at a rate similar to that of food processing, also considerably slower than the growth rate for all manufacturing.

Paper products production grew at a rate similar to the rate for all manufacturing until it declined in 1995 and 1996 (fig. 1). Since mid-1996, production has again grown at a rate similar to other industries. By mid-1997, production had returned to the peak levels of early 1995. Lack of growth in the printing and publishing industries has dampened the demand for paper products. A trend toward less packaging stimulated by increased environmental awareness may also have weakened demand. Growth in exports, however, may offset these factors.

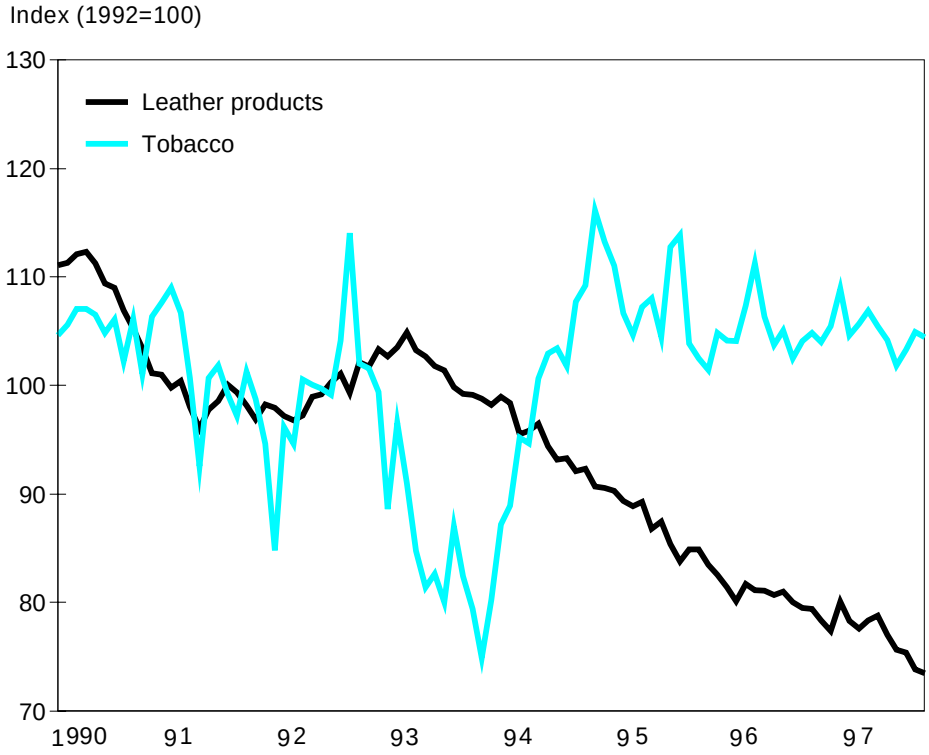
Two other industries that use primarily agricultural materials, leather and tobacco products, have shown flat or declining production in the 1990's (fig. 2). Tobacco products production, of course, has faced slow growth in domestic demand and the prospect of even lower demand as proposals for additional excise taxes and antismoking measures are considered. Leather products output has declined steadily in the face of stiff foreign competition.

Furniture, textiles, and chemicals, industries that use agricultural and wood-based materials for a minor share of inputs, have also grown more slowly than other manufacturing industries (fig. 3). Furniture and textiles grew at a rate similar to that of all manufacturing coming out of the 1990-91 recession. In 1995, however, production flattened for furniture and declined sharply for textiles. Chemical production has grown steadily at about half the rate of growth for all manufacturing. *[Fred Gale, 202-694-5349, fgale@econ.ag.gov]*

Figure 2

Indexes of industrial production: Tobacco and leather products, 1990-97

Production of tobacco and leather products has not grown in the 1990's



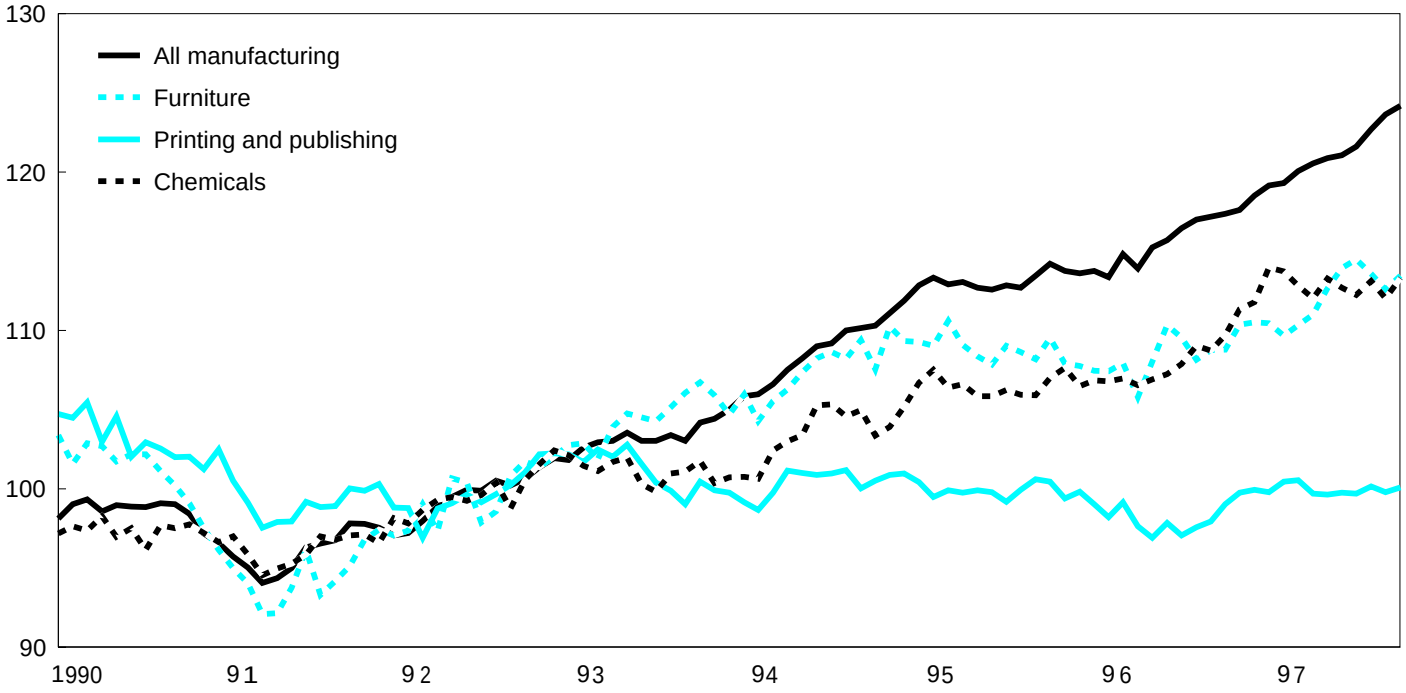
Source: Federal Reserve System Board of Governors.

Figure 3

Indexes of industrial production: Furniture, printing and publishing, chemicals, and all manufacturing, 1990-97

Other industries that use agricultural- and forest-based inputs have also lagged in production growth

Index (1992=100)



Source: Federal Reserve System Board of Governors.